

What is claimed is:

1. An apparatus comprising:
a coronary sinus lead extending from a proximal end to a distal end;
5 one or more conductors disposed within the coronary sinus lead;
the coronary sinus lead including at least one thermal sensor coupled
thereto, at least one thermal sensor coupled with at least one conductor; and
at least one thermal sensor positionable within a coronary sinus of a heart
when the coronary sinus lead is implanted in the heart to measure the temperature
10 of a myocardium.
2. The apparatus as recited in claim 1, wherein the at least one thermal sensor
includes a first thermal sensor and a second thermal sensor.
- 15 3. The apparatus as recited in claim 2, wherein the first thermal sensor is
positionable in the coronary sinus and the second thermal sensor is positionable in a
right atrium of the heart when the first thermal sensor is positioned in the coronary
sinus.
- 20 4. The apparatus as recited in claim 1, wherein at least one thermal sensor is a
thermistor.
5. The apparatus as recited in claim 1, further comprising at least one pacing
electrode coupled with the coronary sinus lead and at least one conductor.
- 25 6. An apparatus comprising:
an over-the-wire coronary sinus lead including a lead body extending from a
proximal end to a distal end;

one or more conductors disposed within the over-the-wire coronary sinus lead;

the over-the-wire coronary sinus lead including at least one thermal sensor coupled thereto, at least one thermal sensor coupled with at least one conductor;

5 and

means for measuring temperature of the myocardium including at least one thermal sensor positionable within a coronary sinus of a heart when the over-the-wire coronary sinus lead is implanted in the heart.

10 7. The apparatus as recited in claim 6, further comprising an electrical stimulation source coupled with the proximal end of the lead, and at least one pacing electrode coupled with the electrical stimulation source.

15 8. The apparatus as recited in claim 6, further comprising a second thermal sensor coupled with at least one conductor, the second thermal sensor positionable within a right atrium of the heart when the at least one thermal sensor is positioned in the coronary sinus of the heart.

20 9. The apparatus as recited in claim 6, further comprising a means for measuring a core temperature.

10. The apparatus as recited in claim 6, wherein at least one thermal sensor comprises a thermistor.

25 11. A method comprising:
providing an implantable lead and an implantable electrical stimulation source;
coupling at least one thermal sensor with the implantable lead;

coupling at least one electrode with a portion of the implantable lead;
placing the implantable lead and one or more thermal sensors within a
coronary sinus of a heart; and

measuring a myocardium temperature from at least one of the thermal
5 sensors within the coronary sinus of the heart.

12. The method as recited in claim 11, wherein coupling at least one thermal
sensor includes coupling a first thermal sensor and a second thermal sensor with the
lead.

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13. The method as recited in claim 11, further comprising positioning the first
thermal sensor within the coronary sinus, and positioning the second thermal sensor
within a right atrium of the heart.

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14. The method as recited in claim 13, further comprising measuring a first
temperature within the coronary sinus, and a second temperature in the right atrium.

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15. The method as recited in claim 14, further comprising measuring a
difference between the first temperature and the second temperature, and pacing the
heart in light of the difference.

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16. The method as recited in claim 11, further comprising measuring
temperature changes in the coronary sinus.

17. The method as recited in claim 16, further comprising pacing the heart with
the lead, and adjusting delivery of pacing signals in light of temperature changes in
the coronary sinus.

18. The method as recited in claim 16, further comprising and using the temperature changes in the coronary sinus as an indicator of a change in the functional status of the heart.

- 5 19. A method comprising:
- providing an implantable lead and an implantable electrical stimulation source;
 - coupling at least one electrode with the implantable lead;
 - coupling at least one thermal sensor with the implantable lead, including
 - 10 coupling a first thermal sensor and a second thermal sensor with the lead;
 - placing the implantable lead and at least one thermal sensor within a coronary sinus of a heart and positioning the first thermal sensor within the coronary sinus, and positioning the second thermal sensor within a right atrium of a heart;
 - 15 coupling the implantable lead with the implantable electrical stimulation source; and
 - measuring a myocardium temperature.

20. The method as recited in claim 19, further comprising monitoring

20 temperature changes within the coronary sinus and temperature changes within the right atrium.

21. The method as recited in claim 19, further comprising providing pacing

25 pulses to the electrode when a decrease in temperature in the first thermal sensor is detected.

22. The method as recited in claim 19, further comprising monitoring a rate of temperature change in the coronary sinus, and monitoring a rate of temperature change in the right atrium.

5 23. The method as recited in claim 22, further comprising determining whether the rate of temperature change in the coronary sinus is greater than the rate of temperature change in the right atrium.

10 24. The method as recited in claim 23, further comprising providing pacing pulses to the at least one electrode if the rate of temperature change in the coronary sinus is greater than the rate of temperature change in the right atrium, and if the temperature in the coronary sinus is less than the temperature of the right atrium.

15 25. The method as recited in claim 19, further comprising monitoring temperature changes in the coronary sinus and using the temperature changes in the coronary sinus as an indicator of a change in the functional status of the heart.